

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
18 November 2004 (18.11.2004)

PCT

(10) International Publication Number
WO 2004/099116 A3

(51) International Patent Classification⁷: C07C 69/76, B41M 5/30, C07C 69/88

(74) Common Representative: CIBA SPECIALTY CHEMICALS HOLDING INC.; Patent Department, Klybeckstrasse 141, CH-4057 Basel (CH).

(21) International Application Number: PCT/EP2004/050607

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date: 26 April 2004 (26.04.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 0310685.3 9 May 2003 (09.05.2003) GB

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (for all designated States except US): CIBA SPECIALTY CHEMICALS HOLDING INC. [CH/CH]; Klybeckstrasse 141, CH-4057 Basel (CH).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report: 31 March 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2004/099116 A3

(54) Title: HEAT SENSITIVE RECORDING MATERIAL

(57) Abstract: New colour developers, new mixture comprising it, its processes for preparation, heat sensitive recording compositions and materials comprising the novel developers and mixtures as well as their uses in heat sensitive recording materials.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP2004/050607

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 C07C69/76 B41M5/30 C07C69/88

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 C07C B41M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, CHEM ABS Data, PAJ, WPI Data, BEILSTEIN Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 395 680 B1 (HAYAKAWA KUNIO ET AL) 28 May 2002 (2002-05-28) column 1, lines 7-13; Table 1, compounds 53 and 54; Column 18, lines 74; preparation example 4 and example 4	1,6,8,9, 12
X	US 4 608 579 A (TANIGUCHI KEISHI) 26 August 1986 (1986-08-26) column 3, lines 7-column 8, line 30; column 12, compounds VI-13 and VI-17	1,6,8,9, 12
X	PATENT ABSTRACTS OF JAPAN vol. 010, no. 134 (M-479), 17 May 1986 (1986-05-17) -& JP 60 259494 A (RICOH KK), 21 December 1985 (1985-12-21) page 529, compounds 1,2,4,5,8-10 abstract	1,6,8,9, 12
		-/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority, claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the International search report

26 October 2004

31.01.2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel: (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Grammenoudi, S

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP2004/050607

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 13, 5 February 2001 (2001-02-05) -& JP 2000 302732 A (RICOH CO LTD; NICCA CHEMICAL CO LTD), 31 October 2000 (2000-10-31) page 8, compounds 53 and 54 abstract	1,6,8,9, 12
X	----- US 2 830 970 A (TAWNEY PLINY O) 15 April 1958 (1958-04-15) column 2, lines 10,11 column 4, line 74 - column 5, line 18	1,10
X	PATENT ABSTRACTS OF JAPAN vol. 010, no. 292 (C-376), 3 October 1986 (1986-10-03) & JP 61 109757 A (SUMITOMO CHEM CO LTD), 28 May 1986 (1986-05-28) cited in the application abstract	10
X	----- PATENT ABSTRACTS OF JAPAN vol. 1995, no. 08, 29 September 1995 (1995-09-29) -& JP 07 118209 A (FUJI PHOTO FILM CO LTD), 9 May 1995 (1995-05-09) abstract	10
X	----- PATENT ABSTRACTS OF JAPAN vol. 1995, no. 10, 30 November 1995 (1995-11-30) -& JP 07 173108 A (FUJI PHOTO FILM CO LTD), 11 July 1995 (1995-07-11) abstract	10
X	----- GB 978 853 A (MONSANTO CO) 23 December 1964 (1964-12-23) claim 1; example 2; page 3, line 33-page 4, line 10	1
X	----- DATABASE CHEMABS 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; BAI, JAEIL ET AL: "New organic photorefractive material composed of a charge-transporting dendrimer and a stilbene chromophore" XP002300422 retrieved from STN Database accession no. 2000:36977 abstract	1
	----- -/-	

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP2004/050607

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>& PROCEEDINGS OF SPIE—THE INTERNATIONAL SOCIETY FOR OPTICAL ENGINEERING , 3799(ORGANIC PHOTOREFRACTIVES, PHOTORECEPATORS, WAVEGUIDES, AND FIBERS), 22-30 CODEN: PSISDG; ISSN: 0277-786X, 1999,</p> <p>-----</p> <p>X DATABASE CHEMABS 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; SHIN, JAE HO ET AL: "Trifluoroacetophenone derivative-based carbonate ion-selective electrodes: effect of diluent pH on the anion selectivity" XP002300423 retrieved from STN Database accession no. 1999:436044 abstract & JOURNAL OF ELECTROANALYTICAL CHEMISTRY, vol. 468, no. 1, 1999, pages 76-84,</p>	1
X	<p>-----</p> <p>X DATABASE CHEMABS 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; ROSENTHAL, UWE ET AL: "Preparation and properties of hexasubstituted benzenes" XP009037778 retrieved from STN Database accession no. 1987:406892 abstract & JOURNAL FUER PRAKTISCHE CHEMIE (LEIPZIG), vol. 328, no. 3, 1986, pages 335-341,</p>	1
X	<p>-----</p> <p>X DATABASE CHEMABS 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; HAEBERLEIN, HARALD ET AL: "Amorphous copolyester with glass transition temperatures above 100.deg." XP001183925 retrieved from STN Database accession no. 1974:71153 abstract & ANGEWANDTE MAKROMOLEKULARE CHEMIE , , vol. 33, 1973, pages 111-127,</p>	1
		-/-

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP2004/050607

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE CHEMABS 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; WENKERT, ERNEST ET AL: "Derivatives of hemimellitic acid. A synthesis of erythrocentaurin" XP002270045 retrieved from STN Database accession no. 1964:461566 abstract & JOURNAL OF ORGANIC CHEMISTRY, vol. 29, no. 9, 1964, pages 2534-2542,</p> <p>-----</p>	1
X	<p>DATABASE CHEMABS 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; BARTON, DEREK H. R. ET AL: "Nature of the .alpha.,.omega.-rearrangement" XP009037873 retrieved from STN Database accession no. 1974:463304 abstract & JOURNAL OF THE CHEMICAL SOCIETY, PERKIN TRANSACTIONS 1: ORGANIC AND BIO-ORGANIC CHEMISTRY (1972-1999), vol. 7, 1974, pages 781-92,</p> <p>-----</p>	1
X	<p>DATABASE CHEMABS 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; SASAKI, SHIN-ICHI ET AL: "Trifluoroacetophenone derivatives as amino acid selective ionophores for the potentiometric determination of phenylalanine" XP001183926 retrieved from STN Database accession no. 2002:670853 abstract & ANGEWANDTE CHEMIE, INTERNATIONAL EDITION, vol. 41, no. 16, 2002, pages 3005-3007,</p> <p>-----</p>	1
X	<p>DATABASE BEILSTEIN BEILSTEIN INSTITUTE FOR ORGANIC CHEMISTRY, FRANKFURT-MAIN, DE; XP009037795 Database accession no. BRN 2302642, 2302666 abstract & DRECHSLER, ET AL.: J. PRAKT. CHEM. 23, 1964, pages 10-18,</p> <p>-----</p> <p>-/-</p>	1

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP2004/050607

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE BEILSTEIN BEILSTEIN INSTITUTE FOR ORGANIC CHEMISTRY, FRANKFURT-MAIN, DE; XP002300430 Database accession no. BRN 3520032 abstract & NIEDERL ET AL.: IND. ENG. CHEM. 30, 1938, pages 1269-1272, _____	1
X	DATABASE BEILSTEIN BEILSTEIN INSTITUTE FOR ORGANIC CHEMISTRY, FRANKFURT-MAIN, DE; XP009037779 Database accession no. BRN 8792442 abstract & ALCALDE, E. ET AL.: J. ORG. CHEM., vol. 66, no. 7, 2001, pages 2291-2295, _____	1
X	DATABASE BEILSTEIN BEILSTEIN INSTITUTE FOR ORGANIC CHEMISTRY, FRANKFURT-MAIN, DE; XP002300433 Database accession no. BRN2684300 abstract & STARRATT, A.N.: CAN. J. CHEM. 46, 1968, pages 767-770, _____	1
X	DATABASE BEILSTEIN BEILSTEIN INSTITUTE FOR ORGANIC CHEMISTRY, FRANKFURT-MAIN, DE; XP002300434 Database accession no. BRN 7606148 abstract & MOLONEY, M. ET AL.: TETRAHEDRON, ASYMMETRY, vol. 7, no. 9, 1996, pages 2551-2562, _____	1
X	DATABASE BEILSTEIN BEILSTEIN INSTITUTE FOR ORGANIC CHEMISTRY, FRANKFURT-MAIN, DE; XP002300435 Database accession no. BRN 9299521 abstract & IWAMOTO, H. ET AL.: TETRAHEDRON LETT., vol. 43, no. 45, 2002, pages 8191-8194, _____	1

INTERNATIONAL SEARCH REPORTInternational application No.
PCT/EP2004/050607**Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-16 (part)

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-16(part)

Compounds of formula (1) according to claim 1 wherein A represents phenylene; mixtures, heat sensitive compositions, recording materials comprising them, processes for the manufacture of these compounds and their use for the manufacture of a heat sensitive recording material.

2. claims: 1-16(part)

Compounds of formula (1) according to claim 1 wherein A represents biphenylene, mixtures, heat sensitive compositions, recording materials comprising them, processes for the manufacture of these compounds and their use for the manufacture of a heat sensitive recording material.

3. claims: 1-16(part)

Compounds of formula (1) according to claim 1 wherein A represents naphthylene and anthrylene, mixtures, heat sensitive compositions, recording materials comprising them, processes for the manufacture of these compounds and their use for the manufacture of a heat sensitive recording material.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP2004/050607

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
US 6395680	B1	28-05-2002	FR	2794121 A1		01-12-2000
			JP	2000355168 A		26-12-2000
			JP	2000355574 A		26-12-2000
US 4608579	A	26-08-1986	JP	1995431 C		08-12-1995
			JP	7012745 B		15-02-1995
			JP	61199989 A		04-09-1986
			JP	60248396 A		09-12-1985
			JP	1966356 C		18-09-1995
			JP	6094231 B		24-11-1994
			JP	60255484 A		17-12-1985
			JP	60255486 A		17-12-1985
			JP	1956533 C		10-08-1995
			JP	6079872 B		12-10-1994
			JP	61066691 A		05-04-1986
			JP	1956538 C		10-08-1995
			JP	6079869 B		12-10-1994
			JP	61116586 A		04-06-1986
JP 60259494	A	21-12-1985		NONE		
JP 2000302732	A	31-10-2000		NONE		
US 2830970	A	15-04-1958	DE	1163538 B		20-02-1964
			FR	1158895 A		20-06-1958
			GB	800294 A		20-08-1958
JP 61109757	A	28-05-1986		NONE		
JP 07118209	A	09-05-1995		NONE		
JP 07173108	A	11-07-1995		NONE		
GB 978853	A	23-12-1964		NONE		